CDM

Illinois Environmental Protection Agency

Southeast Rockford Groundwater Contamination Superfund Site Source Area 7 Pre-Design Quality Assurance Project Plan Addendum

August 16, 2004

Final Report

RUSSELL HART/R5/USEPA/US
08/23/2004 11:32 AM

To

Subject Fw: SE Rockford GW Addendum 3

Tom - While we already have one approval memo on the QAPP addendum, we now have a second approval memo - this one acknowledges receipt/review of the 8/19/04 response materials from CDM that successfully addressed the initial QAPP comments of 8/5/04. Please forward to CDM for their information as well. Thank you. - Russ Hart

----- Forwarded by RUSSELL HART/R5/USEPA/US on 08/23/2004 11:28 AM -----

RICHARD BYVIK/R5/USEPA/US
08/23/2004 10:33 AM

To

Subject SE Rockford GW Addendum 3

seRGCA3.wpd

MEMORANDUM **SMF-4J**

DATE: August 23, 2004

SUBJECT: Approval of the Quality Assurance Project Plan (QAPP) Addendum #3 for the State-Lead Remedial Design (RD) Activities at the **Southeast Rockford Groundwater Contamination Site** in Rockford, Illinois

FROM: Richard L Byvik
Field Services Section (FSS)

TO: Russell Hart
Remedial Project Manager (RPM)

I recommend approval of the QAPP Addendum #3 for the State-Lead RD activities at the **Southeast Rockford Groundwater Contamination Site**, Rockford, Illinois. The subject QAPP was received by FSS on August 19, 2004, Login # 3144. FSS Comments on Addendum #2 of August 5, 2004 were addressed. The Signature page was signed August 19, 2004, and the subject QAPP returned to the RPM.

CC: Steve Ostrodka

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276, 217-782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601, 312-814-6026

ROD R. BLAGOJEVICH, GOVERNOR RENEE CIPRIANO, DIRECTOR

217-524-3300

August 19, 2004

Mr. Glen Ekberg
8065 Harrisville Road
Rockford, Illinois 61109

Refer to: 2010300074—Winnebago County
Southeast Rockford Groundwater Contamination Site
Superfund/Technical Reports

Dear Mr. Ekberg

Pursuant to the May 4, 2004 Grant of Access, the Illinois EPA provided you with notice in a letter dated August 9, 2004 that Illinois EPA intends to perform sampling and other activities specified beginning the week of August 23, 2004 until completion. It is anticipated that actual sampling will begin on Tuesday August 24, 2004. Illinois EPA expects the sampling schedule to take place as follows. During the week of August 23, 2004, Illinois EPA will collect groundwater screening samples and the collection of soil gas samples. Beginning the week of August 30, new ground water monitoring wells will be installed and soil samples will be collected. It is anticipated that beginning September 7, 2004 the existing and new groundwater monitoring wells will be redeveloped and maintenance performed including repairs where it is needed. Groundwater monitoring well sampling is anticipated to begin the week of September 27. Illinois EPA is planning on collecting approximately 42 soil samples, 5 groundwater screening samples, and 41 groundwater samples from groundwater monitoring wells. This schedule and the exact number of samples collected is subject to change depending upon field conditions and potential results encountered.

If you have any questions concerning the work to be performed, please contact me at 815-223-1714 or Terry Ayers, NPL Unit manager at 217-782-9875.

Sincerely,

Thomas Williams by SBG

Thomas C. Williams LPG.
National Priorities List Unit
Federal Sites Remediation Section
Division of Remedial Management
Bureau of Land

bcc: Paul Jagiello DLC
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August 16, 2004

Mr. Thomas Williams
Illinois Environmental Protection Agency
12 Gunia Drive
LaSalle, IL 61301

Subject: 2010300074 - Winnebago County
Source Area 7 Pre-Design Field Study
Final Quality Assurance Project Plan Addendum and Sampling and Analysis Plan
Southeast Rockford Groundwater Contamination Superfund Site
Rockford, Winnebago County, Illinois
Superfund/Technical

Dear Mr. Williams:

Camp Dresser & McKee is pleased to submit two copies of the Source Area 7 Pre-Design Field Study Final Quality Assurance Project Plan (QAPP) Addendum (QAPP), Final Sampling and Analysis Plan (SAP), and Health and Safety Plan for the Southeast Rockford Groundwater Contamination Superfund Site, located in Rockford, Winnebago County, Illinois.

The Final QAPP Addendum and SAP were revised to incorporate U.S. Environmental Protection Agency (USEPA) comments transmitted via e-mail on August 6, 2004. The Final QAPP Addendum consists of page inserts, and the Final SAP is submitted in its entirety.

If you have any questions or comments, please contact me at (312) 251-8337.

Sincerely,

John Grabs, P.G.
Project Manager
Camp Dresser & McKee Inc.

cc: Russ Hart, USEPA (2 copies)
File, Illinois EPA BOL

MEMORANDUM **SMF-4J**

DATE: August 23, 2004

SUBJECT: Approval of the Quality Assurance Project Plan (QAPP) Addendum #3 for the State-Lead Remedial Design (RD) Activities at the **Southeast Rockford Groundwater Contamination Site** in Rockford, Illinois

FROM: Richard L Byvik
Field Services Section (FSS)

TO: Russell Hart
Remedial Project Manager (RPM)

I recommend approval of the QAPP Addendum #3 for the State-Lead RD activities at the **Southeast Rockford Groundwater Contamination Site**, Rockford, Illinois. The subject QAPP was received by FSS on August 19, 2004, Login # 3144. FSS Comments on Addendum #2 of August 5, 2004 were addressed. The Signature page was signed August 19, 2004, and the subject QAPP returned to the RPM.

CC: Steve Ostrodka

SOUTHEAST ROCKFORD GROUNDWATER CONTAMINATION SITE ROCKFORD, ILLINOIS

QUALITY ASSURANCE PROJECT PLAN (QAPP) ADDENDUM

A Element A.6.A.4, and elsewhere in the QAPP and SAP
Groundwater samples are being collected and analyzed for TAL Metals. Please clarify if groundwater samples need to be analyzed for all TAL Metals, or just **iron** and **manganese.**

B Element A.6.A.3 typo
Reference to Figure A6-1, should be Figure A6-2.

C Element B.4.B, typos, paragraphs 2 and 3
References to Appendix B, should be Appendix A

D Element D.1
The current version of the *CLP National Functional Guidelines for Inorganic Data Review* is **July 2002.**

SAMPLING AND ANALYSIS PLAN (SAP)

A Sections 3.1.2 and 5.5.2
Describe in more detail the sample collection procedures for field-filtered samples. Samples should be filtered within 15 minutes.

B Section 5.5.2 page 5 of 5
The last sentence indicates that monitoring well samples will be analyzed for TAL inorganics and cyanide. Please verify if cyanide is a project required parameter. If required, a separate sample must be collected. SAP Table 3-1 and QAPP Tables A6-3 and A6-5 will have to be revised. Other QAPP/SAP tables and sections may also have to be revised. See QAPP Comment **A** above.

MEMORANDUM **SMF-4J**

DATE: August 19, 2004

SUBJECT: Approval of the Quality Assurance Project Plan (QAPP) Addendum #2 for the State-Lead Remedial Design (RD) Activities at the **Southeast Rockford Groundwater Contamination Site** in Rockford, Illinois

FROM: Richard L Byvik
Field Services Section (FSS)

TO: Russell Hart
Remedial Project Manager (RPM)

I recommend approval of the QAPP Addendum #2 for the State-Lead RD activities at the **Southeast Rockford Groundwater Contamination Site**, Rockford, Illinois. The subject QAPP was received by FSS on June 24, 2004, Login # 3130. The Signature page has been signed and returned to the RPM with the subject QAPP. Please return a copy of the completely signed Signature page to the FSS.

CC: Steve Ostrodka

Illinois Environmental Protection Agency

Southeast Rockford Groundwater Contamination Superfund Site
Source Area 7 Pre-Design
Quality Assurance Project Plan Addendum

August 16, 2004

Final Report

A.5 Problem Definition

The Record of Decision for the Source Control Response Action at the Southeast Rockford Groundwater Contamination Superfund Site states that additional IAS for residences near Source Areas 4 and 7 will be conducted during the remedial design phase of the project. The initial IAS data was collected in 1993. The purpose of the initial sampling was to determine if volatile organic vapors were migrating into homes near Source Areas 4 and 7 either horizontally through soil pore spaces or vertically upwards from contaminated groundwater and evaluate risks associated with any detections of volatile organics in indoor air. Since this initial sampling, significant additional guidance has been developed regarding the interpretation of indoor air data. IEPA and USEPA are committed to re-evaluating indoor air quality and potential risks for residences near Source Areas 4 and 7 using current data and updated guidance for interpretation of that data. A Pre-Design Field Study has been completed for Area 4 and the Remedial Design is proceeding. A Final Pre-Design Field Study in Area 7 will be performed to complete data collection needed to develop the Area 7 Remedial Design. Figure A5-1 shows Source Area 4, and Figure A5-2 shows Source Area 7.

In the initial part of the IAS Study, referred to as the screening activity, CDM will begin the process of compiling a defensible data set of the levels of chlorinated solvents in indoor air near Source Areas 4 and 7. In order to develop the data set, locations for collecting the indoor air samples must be identified through screening. CDM will collect soil, soil gas, and groundwater data to provide the screening information for assessment.

This initial data will be assessed to determine appropriate locations for collection of indoor air samples, and further soil-gas sampling as part of the second portion of the IAS Study. A defensible data set of the levels of chlorinated organic compounds in indoor air samples evaluated under current guidance will then be developed to determine if there is risk, and if so, how much, to occupants of dwellings near Source Areas 4 and 7.

The Area 4 Pre-Design Field Study sampling and analysis tasks were performed to delineate the area of soil below the former Swebco building that may require future remediation and determine the iron and manganese concentrations of local groundwater to evaluate whether pre-treatment will be a necessary step within the leachate collection system design.

The Area 7 Pre-Design Field Study sampling and analysis tasks will be performed to define the nature and extent of contamination in the area north of the park and south of the creek and evaluate the groundwater quality in the area of the proposed extraction well system. The groundwater sampling will determine the total and dissolved metals concentrations, and specifically the iron and manganese

concentrations of local groundwater to evaluate whether pre-treatment will be a necessary step within the leachate collection system design.

A.5.A Background Information

Source Area 4

Source Area 4 is a mixed industrial/commercial and residential area located east of Marshall Street, south of Harrison Avenue and north of Alton Avenue. A mobile home park is located east (upgradient) of the area. The source of the volatile organic compound (VOC) contamination in Source Area 4 was found to be the Swebco Manufacturing plant, which is no longer in operation. Subsurface investigations in Source Area 4 have determined that soil contamination is limited to the area beneath the plant parking lot. There is an 8-foot thick residual non-aqueous phase liquid (NAPL) zone at the depth of the water table, which is approximately 30 feet below ground surface. This NAPL layer is not present as a floating layer but is trapped in the soil pore spaces. Downgradient groundwater contains high concentrations of 1,1,1-trichloroethane (1,1,1-TCA), the primary VOC in Source Area 4. Low levels of benzene, ethylbenzene, toluene, xylene, trichloroethene (TCE), dichloroethene (DCE) and dichloroethane (DCA) are also present in groundwater downgradient of Source Area 4.

Soil gas samples collected during the multiple phases of the remedial investigation indicate detections of VOCs just east of the Swebco Plant on the western edge of the mobile home park, to the south of the plant but not across Alton Avenue, and to the west of the plant along the west side of Marshall Street across from the Swebco parking lot. No detections of VOCs were found to the north of the plant. The primary VOC detected in soil gas was 1,1,1-TCA.

Indoor air samples were collected in Source Area 4 in December of 1993. Four residences located within the existing area of the groundwater contaminant plume were sampled and two background homes outside the groundwater contamination area were also sampled. Samples were collected from an outdoor location and an indoor location at each residence. Indoor samples were collected from basements near sump pits or visible cracks in the basement floors or walls. Significant concentrations of 1,1,1-TCA were detected in three of the homes nearest to the source within Source Area 4. These homes are approximately 150 feet from the Swebco property. These homes also had low detections of TCE. VOCs were not detected in outdoor air samples collected in Source Area 4. The indoor air VOC concentrations detected in the homes in Source Area 4 were determined to be below health based air guidelines available at the time. With the data available, it was not possible to determine if the source of the VOCs in the indoor air samples was the groundwater contamination plume or migration of VOC vapors within the soil pore spaces.

Follow-up IAS sampling was completed in July 2003 and a draft technical memorandum was issued with the results in December 2003.

Source Area 7

Source Area 7 is primarily a grassy area located at the eastern end of Balsam Lane. Source Area 7 contains Eckberg Park and an open area containing some woodlands. The park includes a basketball court, tennis court and a playground. The open field and wooded areas are located south of the park on a hillside, which slopes to the north. Two small valleys merge at the base of the hill where surface water drains to an intermittent creek that runs along the north side of Source Area 7. Residences border the area to the west and southwest (downgradient) and distantly to the east (upgradient). Parts of Source Area 7 were once used as gravel pits. Review of aerial photographs and reports from private citizens indicates that illegal dumping likely occurred in Source Area 7. Results of subsurface investigations in Source Area 7 indicate that VOC contamination in the soils extends from the north end of Eckberg Park, northward about 150 feet. This VOC contamination is present from the surface to a depth of approximately 29 feet below ground surface. NAPL was found in the soils at the top of the groundwater table in one soil boring. This NAPL is similar to that in Source Area 4 as it is not free floating but is contained within the soil pore spaces. The NAPL in Source Area 7 is more complex as it contains not only chlorinated VOCs but also aromatic compounds, primarily xylene. The intermittent creek was found to contain the same VOCs as those found in the Source Area 7 soils. Shallow groundwater downgradient of Source Area 7 shows high concentrations of 1,1,1,-TCA, the primary soil contaminant and lesser concentrations of tetrachloroethene (PCE) , TCE, 1,2-DCE, vinyl chloride (VC) and ethyl benzene.

Soil gas samples collected during the multiple phases of investigation at Source Area 7 indicate the highest soil gas concentrations along the former valleys within Source Area 7 that extend from south to north as far as the intermittent creek. Soil gas concentrations to the north along the valley were not closed off and require additional sampling to determine the extent of contamination to the north. To the south, east and west, soil gas VOC concentrations did reach non-detect. To the west, which is the downgradient direction and the closest to area residences, soil gas concentrations reached non-detect approximately 500 feet east of Bavarian Lane, the eastern most north-south street for the downgradient residential area.

Indoor air samples were collected in Source Area 7 in August of 1993. Twelve residences located within the existing area of the groundwater contaminant plume were sampled and two background homes outside the groundwater contamination area were also sampled. Samples were collected from an outdoor location and an indoor location at each residence. Indoor samples were collected from basements near sump pits or visible cracks in the basement floors or walls. The VOC 1,1,1-TCA was detected in all 14 of the homes sampled for Source Area 7 including the two

designated as background. Four homes also had low detections of TCE and 8 homes had low detections of PCE. The VOC 1,1,1-TCA was also detected in one outdoor air sample collected in Source Area 7. The indoor air VOC concentrations detected in the homes in Source Area 7 were determined to be below health based air guidelines available at the time. With the data available, it was not possible to determine if the source of the VOCs in the indoor air samples was the groundwater contamination plume or from other sources within or outside the homes. Based on historical soil gas data, it is unlikely that VOCs are migrating laterally within the soil pore spaces as far as the residential subdivision. However, as previously stated, the exact source of the VOCs detected in the residences has not been determined.

Results of the 1993 investigations for Source Areas 4 and 7 may be found in the "Remedial Investigation Report, Southeast Rockford, Groundwater Contamination Study," January 1995, by CDM. Additional background information for Source Areas 4 and 7 may be found in the SAP.

A.6 Project/Task Description and Schedule

An overview of the activities to be performed and the information in this QAPP is included below.

A.6.A Tasks

The following tasks have been established for the IAS Study and Area 7 Pre-Design Field Study.

A.6.A.1 Task 1

The pre-QAPP meeting for the IAS Study for Source Areas 4 and 7 at the Southeast Rockford Superfund Site was Thursday, April 3, 2003 at the USEPA offices at 77 West Jackson in Chicago, IL. During that meeting, specific information regarding the project schedule, QAPP preparation and review, project goals and objectives, laboratory procurement, and other pertinent project information was discussed. Future project meetings and conference calls will be held to discuss the QAPP and Data Quality Objectives (DQOs) with the team members before field activities commence.

CDM will conduct up to two site visits with IEPA during preparation of the project plans and prior to mobilization for field activities. One visit will be performed to inspect proposed monitoring well locations and conditions and verify that keys are available to open the necessary wells. An additional visit may be required to perform exterior inspections of homes in the areas proposed for indoor air sampling for ease of access of the geoprobe equipment. It is possible that both tasks may be accomplished in one visit.

The purpose of the IAS Study is to determine if volatile organic vapors are migrating into homes near Source Areas 4 and 7 either horizontally through soil pore spaces or vertically upwards from contaminated groundwater and evaluate risks associated with any detections of volatile organics in indoor air.

The purpose of the Area 7 Pre-Design Field Study sampling and analysis tasks will be to define the nature and extent of contamination in the area north of the park and south of the creek and evaluate the groundwater quality for both volatile organics and metals in the area of the proposed extraction well system. The groundwater sampling will also provide the iron and manganese concentration as part of the total metals, in groundwater to evaluate whether pre-treatment will be a necessary step within the leachate collection system design.

A.6.A.2 Task 2

The data gathering effort for this project will be performed in phases. The first phase of data gathering, referred to as the screening activity, is designed to provide the input parameters to perform a preliminary evaluation of the indoor air exposure

pathway for residents living near the groundwater plumes emanating from Source Areas 4 and 7. Soil gas samples will be analyzed for the 14 VOC contaminants of concern presented in Table A6-1. The Project Action Limits are most stringent health risk screening levels provided in USEPA's "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils", or the Subsurface Vapor Intrusion Guidance. It is acknowledged that the Project Quantitation Limits (PQLs) and Method Detection Limits (MDLs) for the compounds VC, 1,2 DCA, TCE, benzene, PCE, ethylbenzene, and chloroform are not below the Project Action Limits. In this case, the Project Action Limits are not truly action limits but inputs to a screening level evaluation of potential risk. Therefore, for compounds with detection limits greater than the action limits, when not detected, a value of one half the detection limit will be used in the screening calculation to provide a conservative estimate of potential risk. Additionally based on past project data, the primary contaminants most likely to be detected in soil gas for this project are the chlorinated VOCs 1,1,1-TCA, PCE, and TCE.

The groundwater data collected in the screening activity will also be used as an input to the Subsurface Vapor Intrusion Guidance risk screening. Table A6-3 provides the PQL's for groundwater as per CLP Statement of Work (SOW) OLC03.2. All CLP PQL's are below the Project Action Limits for this matrix. Groundwater samples are to be collected from shallow monitoring wells within the existing well network. Significant historical data are available for these wells and indication of suspected concentrations (low or medium) will be provided on the chain-of-custody (COC) form to the laboratory for all groundwater samples.

The soil data collected for the screening activity will be used to confirm that the residential homes are not located within the previously defined areas of soil contamination for the Source Areas 4 and 7. Table A6-2 provides the PQL's for soil analysis. All soil samples are expected to be low level and will be initially compared to the IEPA Tiered Approach to Corrective Action (TACO) Tier 1 Soil Remediation Objectives for Residential Properties Inhalation Exposure Route-Specific Values for Soils. The CLP OLM04.2 PQLs are below the PALs for all compounds. In the case of the soil data, the levels are expected to be low or non-detect as the residential areas were previously determined to be outside the source areas.

The second phase of data gathering will include an additional round of soil gas sampling to confirm the results obtained in the screening activity and collection of 24 hour composite air samples from the interior and exterior of homes selected based on the first phase of data gathering. Table A6-4 provides the Project Action Limits for indoor air samples in the residential areas. These values are the most stringent health risk screening levels for indoor air provided in USEPA's Subsurface Vapor Intrusion Guidance. The PQLs are greater than or approaching the Project Action Limits for 1,2-DCA, TCE, and chloroform. The laboratory will report all detections between the

MDL and the PQL as estimated. All laboratory MDL's are below the Project Action Limits.

As part of the current investigation, soil-gas sampling will be completed at a maximum of 20 locations in Source Area 7, and a maximum of 15 locations in Source Area 4. Also, 12 soil-gas samples will be collected at 100 foot intervals in the area near Eckberg Park. Soil-gas samples will be analyzed onsite for the parameters listed in Table A6-1. These compounds were identified based on the 1993 soil-gas sampling, Groundwater Operable Unit, and Phase I and II investigations.

At all locations where soil-gas samples are collected, soil samples will also be collected and analyzed for CLP Target Compound List (TCL) Volatile Organic Analysis (VOA). If groundwater is encountered, then samples will be collected and also analyzed for CLP TCL VOA.

Indoor air, groundwater, and soil samples will be analyzed for CLP TCL VOA.

Samples collected during the Area 7 Pre-Design Field Study include up to 86 soil gas samples to be analyzed on-site for VOCs, thirty-six (36) soil samples and thirty-three (33) groundwater samples to be collected and analyzed for CLP TCL VOAs and up to three (3) groundwater samples to be collected and analyzed for CLP Target Analyte List (TAL) total and dissolved metals.

Area 7 Pre-Design soil gas sample data will not be compared to PALs for this study. The VOC concentrations determined in the soil gas will be compared to look for the highest relative concentrations within the data set and taking into account the make-up of the subsurface, used to select soil sampling points. The locations with the highest relative concentrations within a variety of soil types will be selected for soil sampling.

Area 7 Pre-Design soil sample PQLs and MDLs are the same as described for other soil sampling above. Soil samples will be collected from Geoprobe borings installed in the northern portion of Area 7, north of the park and from the three new monitoring wells during drilling. Soil VOA results will be compared to established remediation goals to determine the extent of additional soils that may require remediation.

Area 7 Pre-Design groundwater PQLs, MQLs and PALs are provided in Table A6-3 as per CLP Statement of Work (SOW) OLC03.2 for low level volatile organics, CLP Multi-Media, Multi-Concentration, Inorganic Analytical Service for Superfund (ILM05.2) and design parameters. The groundwater PALs are set based on required design parameter tolerances for iron and manganese, specifically. The data collected for the remaining metals in the TAL will be used for informational purposes only. All CLP PQL's are below the PALs for this matrix. Groundwater samples for CLP

analysis are to be collected from 5 temporary well points, 25 existing wells and three new monitoring wells to be installed in the south western portion of Source Area 7 near the proposed extraction well system. The groundwater screening level samples collected from the temporary well points are to be used to determine the approximate range of VOC contamination that could be expected in the groundwater samples for CLP analysis from these points.

A.6.A.3 Task 3

Soil-gas, soil, and groundwater samples are being collected first to serve as a screening method to determine homes that may be at higher risk from subsurface contaminants transferring into the air. Soil-gas, soil, and groundwater samples can be collected without the necessity of entering private homes. Once the results have been analyzed from the preliminary samples, specific homes can be targeted in Source Areas 4 and 7 for analysis of indoor air. Indoor air sampling requires pre-screening to obtain the consent and cooperation of the resident, and to determine if a residence is suitable (no routine solvent use in the home, no nearby solvent using businesses).

Figure A5-1 shows the approximate area from which indoor air sampling residences will be selected in Source Area 4. This Figure also indicates the previous IAS locations. Figure A5-2 shows the approximate area from which IAS residences will be selected in Source Area 7. Previous IAS locations are designated on the Figure. These areas were determined based on historical groundwater data, soil gas data, and soil boring data. Figure A7-3 shows the approximate locations of all Area 7 Pre-Design soil gas, soil, and groundwater sample locations.

Table A6-5 is a summary of the sampling and analysis network and specifies the sample matrix, the parameters to be measured, the number of samples to be collected, and the level of QC effort for each sample type.

All sampling and testing will conform to guidelines set forth in the User's Guide to the USEPA CLP. This QAPP and sections of the SAP discuss the specific sampling and analytical procedures to be followed for this project. Sampling network design and rationale are discussed in the Section 4 of the SAP.

A.6.A.4 Task 4

Analytical tasks related to the IAS Study include:

- Soil gas samples: target list of 14 compounds (field laboratory, New Age, on-site Gas Chromatography/Mass Spectroscopy [GC/MS])
- Soil samples: CLP TCL VOA
- Groundwater samples: CLP TCL VOA

- Monitoring well sampling (14 wells): CLP TCL VOA

- Indoor air samples: target list of 14 compounds (Air Toxics)

Analytical tasks related to the Area 7 Pre-Design Field Study include:

Soil gas and groundwater screening samples: target list of 14 compounds (field laboratory, New Age, on-site Gas Chromatography/Mass Spectroscopy [GC/MS])

- Soil samples: CLP TCL VOA

- Groundwater samples: CLP TCL VOA and TAL Metals

A complete detailed description of the analytical tasks and associated quality control, including analytical Standard Operating Procedures (SOPs) is included in Element B4 of this QAPP.

A.6.A.5 Task 5

CDM will perform data assessment activities for all data generated during the study to ensure that the data is sufficient to support the risk assessment and pathway evaluation.

Initial data validation will be conducted by the USEPA CLP to determine if the data meets the contract requirements as specified by the SOWs for organic and inorganic analysis. Data validation activities will be performed in accordance with current USEPA CLP guidance. Factors to be considered in data validation include sample holding times, instrument tuning and performance, instrument calibration, blanks, surrogate recoveries, matrix spike/matrix spike duplicate (MS/MSD) analysis, and other QC parameters.

The specifications provided in the guidelines and/or acceptance criteria given by the USEPA FSS will be followed when performing data validation.

Data assessment will be performed upon completion of data validation activities. The assessment will be based on all new data and existing data determined to be consistent with the goals of the investigation. Data will be evaluated as it compares to project objectives and summarized into a logical, useable format for data manipulation and interpretation.

CLP data will be 100% validated at a Level III validation by USEPA FSS staff. Data generated by the non-CLP lab, Air Toxics will be 100% validated by CDM trained data validation staff. Data generated by the field GC/MS will not be validated. Further information and details on data validation may be found in Element D1 of this QAPP.

A.6.A.6 Task 6

Quality assurance assessment information may be found in Element C1 of this QAPP.

Performance and systems audits may be conducted for activities conducted by any entity performing services on this project, including CLP laboratories and field team activities.

Performance and systems audits of field activities may be performed periodically by the CDM QA Manager in accordance with CDM audit procedures, the USEPA Region V FSS or the IEPA PM. Audits will be performed to evaluate sampling activities including sample ID, chain-of-custody, field documentation and proper sampling procedures. The results of the field audits will be reported as part of the Quality Assurance Reports to Management.

A.6.A.7 Task 7

Element D3 of this QAPP includes information about the data usability assessment reconciliation process. DQOs are found in Element A7 of this QAPP. Validated data will be assessed for decision making as specified in the DQOs.

A.6.A.8 Task 8

Element A9 of this QAPP describes all project documents, records and reports that will be compiled and/or generated during the course of this project. Element C2 of this QAPP describes reports to management.

A.6.B Project Schedule

The project schedule for the IAS Study is shown in Figure A6-1. The project schedule for the Area 7 Pre-Design Field Study is shown in Figure A6-2.

B.4 Analytical Methods Requirements

Samples collected during this project will be analyzed in accordance with standard USEPA and/or nationally recognized analytical procedures. The purpose of using standard procedures is to provide analytical data of known quality and consistency. Analytical laboratories will adhere to QC requirements as established by USEPA methods.

Laboratory information may be found in Element A.4.D of this QAPP. Following is a description of analytical methods by media type. Analyte groups of interest are summarized in Tables A6-1 through A6-4. QC samples to be collected are described in the SAPs, Section 7.

B.4.A IAS Analytical Methods Requirements

Soil Boring and Groundwater Monitoring Well Samples

Samples collected from the existing monitoring wells and soil borings to be installed using a Geoprobe rig will be analyzed for TCL Volatile Organics in accordance with the current CLP SOWs. Groundwater samples will be analyzed in accordance with OLC03.2 and soil samples will be analyzed in accordance with OLM04.2 for low concentration soils. A summary of contract requirements for these SOWs, including the Contract Required Quantitation Limits is provided in Appendix B.

Soil Gas and Soil Boring Groundwater Samples

New Age will be using a field GC/MS to analyze soil gas samples and groundwater from bore holes for the 14 volatile organic contaminants of concern for this project as previously described in Element A6 of this QAPP. Their SOP, "Field Procedure GC/MS-100 VOA for Analysis of Volatile Organic Compounds by EPA SW-846 Method 8260" describes sample preparation, clean-up, analysis, calibration, standard preparation for aqueous samples and is included in Appendix A. New Age SOP "Field Procedure GC/MS-109, Analysis of Soil Gas Samples Utilizing a Per Column Concentrator" in conjunction with SOP GC/MS-100 VOA provides the analytical procedures for soil gas samples. Their most current MDL study, January 2003, is provided in Appendix A. It should be noted that the MDLs calculated are in parts per billion (ppb) and not in parts per billion by volume (ppbv) as those provided in Table A6-1. Section 3.1.1 of the New Age Quality Assurance Manual, March 2003, provided in Appendix A, describes their MDL Study procedure.

Air Samples

Air Toxics will perform the analysis of the air samples collected in six liter Summa canisters. These samples will be analyzed using Air Toxic's SOP #38, "Analysis of Volatile Organic Compounds in Summa Polished Canisters by GC/MS Selective Ion Monitoring, EPA Method TO-15". This SOP was provided to USEPA under separate cover due to confidentiality issues. The laboratory will report the 14 VOCs of concern

as listed in Table A6-4. A recent MDL Study and Air Toxics SOP # 39 "Procedures to Perform an MDL Study are provided in Appendix B.

B.4.B Area 7 RD Pre-Design Field Study Analytical Methods Requirements

Soil Gas and Geoprobe Groundwater Samples

New Age will be using a field GC/MS to analyze soil gas samples and groundwater from temporary well points for the 14 volatile organic contaminants of concern for this project as previously described in Element A6 of this QAPP. Their SOP, "Field Procedure GC/MS-100 VOA for Analysis of Volatile Organic Compounds by EPA SW-846 Method 8260" describes sample preparation, clean-up, analysis, calibration, standard preparation for aqueous samples and is included in Appendix A. New Age SOP "Field Procedure GC/MS-109, Analysis of Soil Gas Samples Utilizing a Per Column Concentrator" in conjunction with SOP GC/MS-100 VOA provides the analytical procedures for soil gas samples. Their most current MDL study, January 2003, is provided in Appendix A. Section 3.1.1 of the New Age Quality Assurance Manual, March 2003, provided in Appendix A, describes their MDL Study procedure.

Soil Boring and Monitoring Well Installation Soil Samples

Soil samples collected from the soil borings to be installed using a Geoprobe rig and during well installation will be analyzed for TCL Volatile Organics in accordance with the current CLP SOW, OLM04.2 for low concentration soils. A summary of contract requirements for this SOW, including the Contract Required Quantitation Limits is provided in Appendix A.

Geoprobe Groundwater and Monitoring Well Samples

Samples collected from the new and existing monitoring wells and temporary well points to be installed using a Geoprobe rig will be analyzed for TCL Volatile Organics in accordance with the current CLP SOW OLC03.2. Groundwater samples from the three new monitoring wells will be analyzed for TAL metals in accordance with current CLP SOW ILM05.2. A summary of contract requirements for these SOWs, including the Contract Required Quantitation Limits is provided in Appendix A.

D Data Verification/Validation and Usability

Laboratory results will be reviewed for compliance with DQOs. As required by USEPA Region V, all data will be validated based on the project needs. Data validation and evaluation are discussed in the following subsections.

D.1 Data Verification/Validation and Verification Requirements

CDM and/or USEPA will validate data submitted by analytical laboratories. Data generated by the CLP will be validated by FSS at USEPA. Data generated by Air Toxics will be validated by CDM staff trained in data validation. Data validation is not planned for the data generated by the field GC/MS unless field audits indicate significant non-compliance issues during sample collection and analysis. The analytical data from the field screening of soil gas and groundwater for volatile organics analysis will be evaluated for accuracy, precision and completeness in the field. The data will be assessed by reviewing field and laboratory duplicates and blanks and the results will be summarized in the report.

All data validation for groundwater will be performed according to the USEPA CLP NFG for Low Concentration Organics (USEPA, June, 2001), with method specific requirements superseding the NFG guidelines. Data validation for TAL Inorganic analyses in groundwater will be performed according to the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (NFG) (EPA, July 2002), with method specific requirements superseding the NFG guidelines. Soil data validation will be performed according to the USEPA CLP NFG for Organic Data Review (USEPA, October 1999). The data validation process for the air samples will be modified to accommodate the method. Table D1-1 provides a list of data requirements to be checked during validation. Table D1-2 provides the checklist to be followed for evaluation and validation of the data. Table D1-3 provides a list of data requirements to be checked during review of ICP-AES (inorganic) data. Table D1-4 provides the checklist to be followed for evaluation and validation of the data.

Data validation consists of examining the sample data package(s) against pre-determined standardized requirements. The validator may examine, as appropriate, the reported results, QC summaries, case narratives, COC information, raw data, LCS/LCSDs, MS/MSDs, initial and continuing instrument calibration, and other reported information to determine the accuracy and completeness of the data package. During this process, the validator will verify that the analytical methodology was followed and QC requirements were met. The validator may

recalculate selected analytical results to verify the accuracy of the reported information. Analytical results will then be qualified as necessary.

For CLP data, data verification includes checking that results have been transferred correctly from laboratory data printouts to the laboratory report and to the SEDD. For air data from Air Toxics, data verification includes checking that results have been correctly transferred from the raw data to the laboratory reports. Verification of field results, including field GC/MS includes checking that results from field log books have been correctly transferred to data reports as well as checking to ensure all deviations from the approved sampling and analysis procedures are well documented.